The DCT 531i is characterized by very good accuracy and excellent temperature behaviour and is therefore ideally suited for applications where precise pressure measurement is necessary (e.g. test benches, leakage tests, etc.).

Thanks to the integrated RS485 interface (based on the MODBUS RTU protocol), reliable and robust data transmission is available, which also works without problems over longer distances. Since the DCT 531i works directly with a master e.g. is coupled to a SPS, conversion losses of an analogue input card are avoided.

Different mechanical and electrical connections are available so that the DCT 531i can be used in various applications without any problems.

Preferred areas of use are

- Plant and machine engineering
- Energy industry
Precision Pressure Transmitter with RS485 Modbus RTU

### Technical Data

#### Input pressure range

<table>
<thead>
<tr>
<th>Nominal pressure gauge [bar]</th>
<th>0.10</th>
<th>0.16</th>
<th>0.25</th>
<th>0.40</th>
<th>0.60</th>
<th>1</th>
<th>1.6</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal pressure absolute [bar]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.40</td>
<td>0.60</td>
<td>1</td>
<td>1.6</td>
<td>2.5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Overpressure [bar]</td>
<td>5</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Burst pressure ≥ [bar]</td>
<td>7.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>7.5</td>
<td>7.5</td>
<td>15</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Nominal pressure gauge/abs. [bar]</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td>40</td>
<td>60</td>
<td>100</td>
<td>160</td>
<td>250</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Overpressure [bar]</td>
<td>40</td>
<td>80</td>
<td>80</td>
<td>105</td>
<td>210</td>
<td>600</td>
<td>600</td>
<td>1000</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Burst pressure ≥ [bar]</td>
<td>50</td>
<td>120</td>
<td>120</td>
<td>210</td>
<td>420</td>
<td>1000</td>
<td>1000</td>
<td>1250</td>
<td>1250</td>
<td></td>
</tr>
</tbody>
</table>

#### Output signal

Digital: RS485 with Modbus RTU protocol (pressure & temperature)

#### Supply

Direct voltage: $V_S = 9 \ldots 32 \text{ V}_{\text{DC}}$

#### Performance

**Accuracy**
- Nominal pressure ≥ 0.25 bar: ± 0.10 % FSO
- Nominal pressure < 0.25 bar: ± 0.25 % FSO

**Long term stability**
≤ ± 0.1 % FSO / year at reference conditions

**Measuring rate**
500 Hz

**Delay time**
500 msec

1 accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

#### Thermal effects (offset and span)

**Thermal error**
≤ ± 0.02 % FSO / 10 K

**In compensated range**
-20 ... 80 °C

#### Permissible temperatures

**Medium**
-25 ... 125 °C

**Electronics / environment**
-25 ... 85 °C

**Storage**
-40 ... 100 °C

#### Electrical protection

- Short-circuit protection: permanent
- Reverse polarity protection: on supply connections no damage, but also no function

#### Mechanical stability

**Vibration**
10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6

**Shock**
100 g / 11 msec according to DIN EN 60068-2-27

#### Materials

**Pressure port / housing**
Stainless steel 1.4404 (316 L)

**Seals**
- Standard: FKM
- Option: EPDM
- Without welded version
- Others on request

**Diaphragm**
Stainless steel 1.4435 (316 L)

**Media wetted parts**
Pressure port, seal, diaphragm

#### Miscellaneous

**Weight**
Approx. 210 g

**Current consumption**
Max. 10 mA

**Ingress protection**
IP 67

**Installation position**
Any

**Operational life**
100 million load cycles

**CE-conformity**
- EMC Directive: 2014/30/EU
- Pressure Equipment Directive: 2014/68/EU (module A)

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1 Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.

2 This directive is only valid for devices with maximum permissible overpressure > 200 bar.
DCT 531i
Precision Pressure Transmitter with RS485 Modbus RTU
Technical Data

Wiring diagram

Pin configuration / electrical connection

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>M12x1, metal (5-pin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply +</td>
<td>1</td>
</tr>
<tr>
<td>Supply –</td>
<td>3</td>
</tr>
<tr>
<td>A (+)</td>
<td>2</td>
</tr>
<tr>
<td>B (–)</td>
<td>4</td>
</tr>
<tr>
<td>Reset</td>
<td>5</td>
</tr>
<tr>
<td>Shield</td>
<td>plug housing</td>
</tr>
</tbody>
</table>

Dimensions (mm / in)

standard

options

G1/2" DIN 3852
G1/4" DIN 3852

G1/2" EN 837
G1/4" EN 837

G1/2" NPT
G1/4" NPT

G1/2" DIN 3852 open port (p<sub>N</sub> ≤ 40 bar)
G1/2" DIN 3852 with semi-flush sensor (p<sub>N</sub> ≤ 40 bar)

* with nominal pressure > 40 bar the length of devices increases by 9 mm [0.35 in]

* metric threads and other versions on request

www.sensorsone.com
**Configuration Modbus RTU**

<table>
<thead>
<tr>
<th>Standard configuration</th>
<th>001</th>
<th>-</th>
<th>1</th>
<th>-</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>247</td>
</tr>
<tr>
<td><strong>Baud Rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4800 Bd</td>
<td>0</td>
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<tr>
<td>9600 Bd</td>
<td>1</td>
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</tr>
<tr>
<td>19200 Bd</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38400 Bd</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odd</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Even</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Configuration code</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(to specify with order)</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Ordering code DCT 531i

### Pressure

<table>
<thead>
<tr>
<th>Gauge/Absolute</th>
<th>DC 7</th>
<th>DC 8</th>
</tr>
</thead>
</table>

### Input

| [bar] | 0.10 | 0.16 | 0.16 | 0.25 | 0.40 | 0.80 | 1.0 | 1.0 | 1.0 | 1.6 | 2.5 | 4.0 | 6.0 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 1000 |
|--------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|-----|------|-----|-----|-----|-----|-----|
|        | 1000 | 1600 | 2500 | 4000 | 6000 | 10001| 1601| 2501| 4001| 6001| 1002 | 1602| 2502| 4002| 602 | 102 | 162 | 252 | 402 | 602 | 1003 | 1603| 2503| 4003| 6003|

### Output

- RS485 Modbus RTU

### Accuracy

- Standard for $p_N \geq 0.25$ bar: 0.10 % FSO
- Standard for $p_N < 0.25$ bar: 0.25 % FSO

### Electrical connection

- Male plug M12x1 (5-pin) / metal
  - Standard: N
  - Customer: 9

### Mechanical connection

- G1/2" DIN 3852: 1000
- G1/2" EN 837: 2000
- G1/4" DIN 3852: 3000
- G1/4" EN 837: 4000
- G1/2" DIN 3852 with semi-flush sensor: H00
- G1/2" DIN 3852 open pressure port: N
- 1/2" NPT: N00
- 1/4" NPT: N04
- Customer: 999

### Seal

- FKM: 1
- EPDM: 3
- Customer: 9

## Special version

- Standard: 1
- Customer: 999

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1. Absolute pressure possible from 0.4 bar
2. Not possible for nominal pressure $p_N > 40$ bar
3. Welded version only with pressure ports according to EN 837 and NPT, possible for $p_N \leq 40$ bar